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characterized only by its constant relation to the outer world, and the author believes any other definition is artificial and arbitrary. More explicitly, a species is defined as comprising all those individuals which have arisen by vegetative reproduction or by self fertilization, and which for many generations under like conditions have shown identical characters. This definition is not arbitrary to the reviewer, provided the assumption of a specific structure upon which it rests is not arbitrary. If by definition potencies can never transgress the limit prescribed by the specific structure and variation is merely the expression of potencies, how have species arisen by variation? The potencies of the author are merely inherent capacities to respond to certain combinations of external conditions and are purely immaterial as compared with the pangens of DE VRIES, which are material and carry the unit characters. To some investigators this discrimination will probably appeal as being an interpretation closer to nature and more logical from the strictly physiological standpoint. To others it may seem as merely a restatement of the conception of DE VRIES. The latter might easily inquire what difference it makes whether a given variation has arisen by an inactive pangen becoming active or by a hitherto impotent potency becoming potent.—RAYMOND H. POND.

The lakes of Scotland and Denmark.—At the invitation of Sir JOHN MURRAY, DR. C. WESENBERG-LUND¹⁵ spent three or four weeks on the Scottish lakes in order to make a comparison with the lakes of Denmark. While this was a short time in which to make examination of a new country nevertheless we should expect interesting results from one who has not only accomplished so much thoroughly good work in the study of lakes, but has shown unusual skill and originality in his interpretations.

The general differences which the author finds between the Danish and Scottish lakes are the differences which we should expect between shallow and deep lakes. The Danish lakes have more plankton, more floating and submerged vegetation, and more distinct littoral zones of vegetation. The greater seasonal variations in the Danish lakes is noted; this, of course, would be expected from the greater variations in temperature. There are more highly colored crustacea in the Scottish than in the Danish lakes. The reviewer thinks the author right in correlating this red color with low temperature, rather than with elevation as has been done by some other authors.

Among the diatoms the author notes the absence of *Melosira* and *Stephanodiscus* in the Scottish lakes, with an abundance of *Asterionella* and *Tabellaria*. These facts compare well with the differences in America between the deep and shallow lakes. The Scottish lakes are remarkable for the large number of desmids. These desmids are of forms that are common in the pools of the hillsides. The occurrence of these desmids in the plankton, together

¹⁵ WESENBERG-LUND, C., A comparative study of the lakes of Scotland and Denmark. Proc. Roy. Soc. Edinburgh 22:401-488. pls. 2. 1905.

with the occurrence of Entomostraca that are also common in pools, leads the author to the generalization that the limnetic plankton of the Scottish lakes is of littoral origin, and that the transportation of these forms to become a part of the limnetic fauna and flora is favored by the steep hillsides surrounding the lakes, and the extremely narrow littoral region.

The author enters upon a somewhat detailed discussion of the influence of the organic life upon the lakes themselves, showing how in the Danish lakes the algae and higher plants make deposits of lime which are partly thrown upon the beach, and partly fall to the bottom in the limnetic region. In these bottom deposits it is again worked over by worms and insect larvae, which devour the remaining organic matter and leave the bottom sometimes composed almost entirely of lime and clay. In the Scottish lakes the bottom in the deeper portions is composed of material largely derived from the littoral and shore regions, and there is an absence of lime.

The general conclusion is that while the Danish lakes are filling up, the Scottish lakes will remain with very slight alteration for ages.—C. DWIGHT MARSH.

Chlorosis.—One of the most notable papers recently published on the type of diseases which may be classed as chlorosis is that of BAUR on the infectious chlorosis of the Malvaceae. The variegated mallows in cultivation were derived from a form of *Abutilon striatum* known as *A. Thomsoni*, which appeared in a collection of *A. striatum* imported into England from the West Indies in 1868. This plant was found to be capable of transmitting its variegation by grafting. BAUR finds that if the leaves are removed from variegated plants, or if the shoots are cut back so that no leaves remain and the plants kept in the dark, new shoots form only two or three variegated leaves, and if those are removed the plants remain permanently green in the light unless they are again infected from scions of variegated plants. However, if latent axillary buds on the old parts are forced into growth, these produce shoots with variegated leaves which in turn infect all newly formed leaves on the plant. When all variegated leaves are removed from a plant exposed to light, the plant becomes permanently green. Similarly when scions of the green but susceptible *A. arboreum* are grafted on defoliated variegated plants, the scions remain green, but here also if a variegated shoot is allowed to develop from the stock it rapidly infects the whole plant. The author concludes that the variegation in these plants is caused by a substance or virus which is formed only in the light in the chlorotic parts of the plants; that this virus is produced only in small excess so that it is rapidly used up if the variegated leaves are continually removed. The substance is capable of infecting only the embryonic leaves and in those it is stored for months in an inactive form. By appropriate girdling and grafting experiments the approximate rate of movement and the path followed was determined. Movement takes place in the cortex and not with the transpiration stream. When scions of immune *A. arboreum* are grafted on a variegated *A. Thomsoni*, they grow vigorously but are not infected;